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LICHENS—PELTIGERA.

CAROLYN W. HARRIS.

The genus *Peltigera* is one of the most common among the lichens. While its range is generally northern, some species are found in all parts of our globe where conditions are favorable to their growth. In Europe and North America there are several species which are very abundant. Some of the *Peltigeras* resemble closely some species of *Nephroma*, but the fruit is borne on the upper side of the extended lobes of the thallus instead of on the under side as in *Nephroma*.

It is very difficult to determine the different species when sterile because of the great similarity of the thallus.

A well known lichenist says "it is impossible to do so with certainty."

The thallus is large, with rounded lobes, quite thick and soft when fresh, becoming brittle when dried. The color is bluish or brownish green, which changes to brown or brownish gray when dried. The lower surface is light brown, with conspicuous veining, and has usually long, hair-like rhizoids which cling so closely to the substratum, especially when growing on moss, that it is difficult to separate them.

The apothecia are usually large and are terminal upon the extended lobes of the thallus. When young they are peltate, but in many species are revolute when fully developed.

The different species of *Peltigera* are found on damp, mossy rocks and on the earth, often growing with mosses. They require a great deal of moisture; when dry they shrivel and become very brittle. After a rain when the cells are filled with water they unfold like a flower and are more than doubled in size.

Peltigeras are supposed to be of rather slow growth and probably they are until they are well started, after that they increase rapidly. One I transplanted a year ago is now two thirds larger than it was at that time and is fruiting abundantly.

No doubt many of the lichens which have been generally considered of slow growth have not been carefully observed for any length of time. Any one interested in the lichens having the opportunity of studying one particular specimen throughout an entire year, or even longer, and carefully keeping an account of its growth, fruiting, any change in form or color, would be doing an educational work.

PELTIGERA VENOSA (L.) Hoffm. Thallus small, erect, ovate to fan

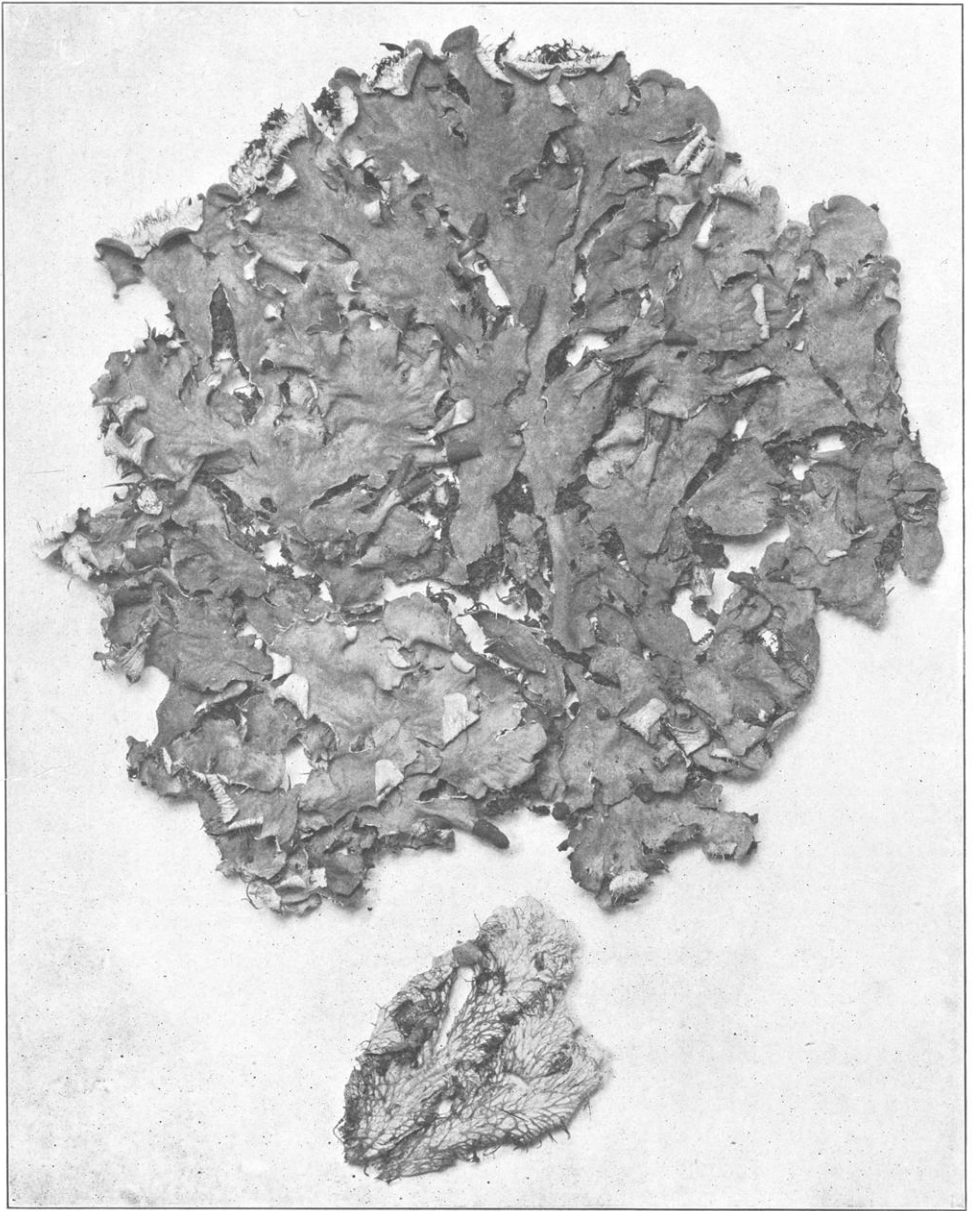


PLATE I. *Pelligera canina*.

shaped, with broad, flat lobes on whose edges are borne the apothecia. The thallus is covered with a powdery bloom, in color it is a gray green, frequently turning a reddish brown when pressed. The under surface is nearly white, with dark brown felt-like branching veins traversing the surface of the thallus and growing into a thick mat at the center.

The apothecia are large, round and flat, and are found on the slightly elongated lobes of the upper side of the thallus. The disk is dark brown or black, orbicular, the margin thick with finely serrate edges.

P. VENOSA is a small, but handsome species; it is rare in the Eastern States, but quite common in the far west, grows on wet, clayey, or argillaceous soil, often in the crevices of rocks near waterfalls.

PELTIGERA APHTHOSA (L.) Hoffm. Fig. 1. The thallus of this species is large, smooth, rather soft, and covered with scattered appressed dark, irregularly shaped warts. The lobes are broad and round. The color an apple green turning to a dull green; when dried is usually a light yellow brown. The under surface is cream color, with reticulated blackish veins, which at the center form a close black nap.

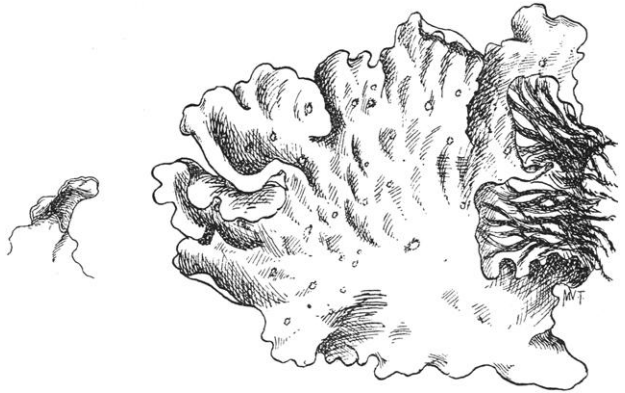


Fig. 1. *Peltigera apthosa* \times 0.

The apothecia are large and round, borne on the ascending lobes of the thallus; when developed they become revolute and curl around these extended lobes.

P. apthosa is a large and common species, is found on rocks among mosses and on the earth. It is easily distinguished from the other *Peltigeras* by the wart-like depressions on the upper side; in some specimens these are quite large and crowded, in others they are small and scattered.

PELTIGERA HORIZONTALIS (L.) Hoffm. This species resembles both *P. canina* and *P. polydactyla*, but the thallus is smooth, not downy as in *P. canina*, nor polished as in *P. polydactyla*. The thallus is large, in color is greenish to reddish brown. The under side is about the same color, is covered with dark veins which soon coalesce and form a dark brown felt-like nap. The fibrils are few and short, and almost black.

The apothecia are on the scarcely elongated lobes; they are oblong, horizontal, rather large; the disk is reddish brown, with a finely serrated margin.

P. horizontalis is not so common a species as *P. canina* and is found in the same localities; it is usually fertile.

PELTIGERA POLYDACTYLA (Neck.) Hoffm. Fig. 2. Thallus large, very smooth and thin, with a somewhat polished surface; the lobes are broad and round with slightly crisped margins. The color is a bright grass green, becoming lead color or brown when pressed. The under side is light brown, with tufts of dark brown fibrils, the reticulated veins are a light brown, turning much darker toward the center.



Fig. 2. *Peltigera polydactyla* $\times 0$.

The apothecia are usually large and revolute, digitately clustered and are borne on the extended lobes of the thallus. The disk is reddish brown, with a crenate margin of lighter color. The habitat of this species is rocks and decaying wood; it is a common one throughout the United States.

PELTIGERA SCUTATA (Dicks.) Leight. The thallus of *P. scutata* is small, quite thin and somewhat rough; the color is a dull green, becoming a light reddish brown. The lobes are narrow and crisped, with frequently gray soredia on the margins. The under side is almost white with light brown veins which forms a spongy nap.

The apothecia are small and are found on the short and somewhat scattered lobes of the thallus; the disk is a dark, dull brown.

P. scutata is found on rocks and earth with mosses. It is not a rare species, but not so common as many others of the *Peltigeras*.

PELTIGERA PULVERULENTA (Tayl.) Nyl. Thallus not as large as in *P. polydactyla*, it is furrowed and pitted, thin and somewhat granulated, has short, crisped lobes. In color is a grayish green, soon turning to a greenish brown. The under side is light brown, with veins of the same color which toward the center coalesce, forming a close nap.

The fertile lobes are narrow and compressed, on these are borne the medium sized apothecia, which are round, with dark brown disks; fruiting specimens are rare.

P. pulverulenta is found in both the Eastern and Western States, but is not a common species; it grows on rocks and earth in very moist localities.

PELTIGERA RUFESCENS (Neck.) Hoffm. This species so closely resembles

P. canina that they are often confused. The thallus of *P. rufescens* is not so downy as *P. canina*, it is more rigid and the lobes are narrower and more crowded, they are elevated and crisped. In color it is a greenish gray, becoming a dark reddish brown. The under surface has brown reticulated veins and dark brown fibrils.

The apothecia are usually large, oblong and finally revolute; the disk is a dark chestnut. This species, like most of the *Peltigeras*, is found on rocks and earth with mosses.

PELTIGERA CANINA (L.) Hoffm. Plate I. Thallus rather large, sometimes very large, is thin and tough, but soft and limp, is downy and often furrowed. In some specimens the thallus is smooth, except at the margins of the flat, rounded lobes, where it is wavy. In color it is grayish or brownish green. The under surface is a very light brown, almost white, with vertical veins and fibrils of the same color; these are short and thick giving a sponge like appearance.

The apothecia are quite large, at first are round and flat, but soon are somewhat revolute and elongated.

P. canina is a common species, is found on moist earth and on rocks. When pressed its color changes more than that of any other species of *Peltigera*; it loses all traces of green and becomes a reddish or russet brown. It is a widely distributed species, growing in Europe from Lapland to Switzerland, and throughout North and South America.

PELTIGERA CANINA (L.) Hoffm. var. *SPONGIOSA* Tuck. This variety, which is subalpine, corresponds to *P. canina* in general characteristics, the thallus is thinner, more brittle, and the under surface is covered with a close nap of white fibrils, which changes toward the center to darker reticulated veining. In some specimens these nap-like fibrils are quite long. A large mat of *P. spongiosa* was collected by Dr. and Mrs. N. L. Britton at Rifle Notch, Essex Co., New York, which when fresh had fibrils a quarter of an inch long. The upper side of the thallus was a delicate gray green, the lobes were long and broad.

POGONATUM URNIGERUM (L.) BEAUV.

MARY F. MILLER.

There is a railroad embankment near Shandaken, N. Y., where this moss is very abundant. This summer, on the 14th of July, I found thousands of the young sporophytes just making their appearance (Fig. 1). The blackened setae and capsules of the previous year were still attached to many of the plants. It was nearly two months, Sept. 9th, before the capsules were matured (Fig. 2). While collecting some of these fertile plants I noticed that a number of calyptras seemed to be turned inside out, and to stand straight up from the tips of the opercula. Examining the plants, I found calyptras in all stages of departure. It seems as though the calyptra makes ready to depart by an upward movement of all except its top (Fig. 3), that seems to sink in, or rather, the upper portion of the calyptra is so bunched